

### REMARKS/ARGUMENTS

By this Amendment, claims 1, 6, and 22 have been amended. Claims 1-9, 11-14 and 21-25 are pending in the present application.

Claims 21, 22, and 25 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the Annual Report of Brewing Industry Research Foundation in light of Scott. Claims 1-9, 11-14, and 21-25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over CN Pat. No. 1065488 to Kong et al. in view of WO95/07628 to Lindahl et al., and as being unpatentable over the Report in light of Scott. Applicants respectfully traverse the rejections.

The present invention as recited in amended claim 1 is a process for the production of a cereal wort or beer having a high content of soluble  $\beta$ -glucan of more than 0.2 wt % from a cereal or mixture of cereals in which the  $\beta$ -glucanase activity of any ingredient employed in the process will not decrease soluble  $\beta$ -glucan by more than 20 wt% compared to the yield from the corresponding source of non-germinated cereal or mixture of cereals. The process includes inactivating  $\beta$ -glucanase to obtain a treated cereal. An aqueous cereal slurry is formed containing from 10% to 30% by weight of the treated cereal, the cereal being wet or dry milled. The slurry is mashed at a temperature above 50°C in the presence of at least one starch degrading enzyme and at least one protein degrading enzyme.

In contrast to the present invention as recited in amended claim 1, Kong et al. does not teach or suggest inactivating  $\beta$ -glucanase to obtain a treated cereal. Further, Kong et al. contains no teaching or suggestion of producing a cereal wort or beer having a high content of soluble  $\beta$ -glucan. Thus, Kong et al. does not anticipate or render obvious the present invention as recited in amended claim 1.

Lindahl et al. does not cure the deficiencies of Kong et al. Lindahl et al. contains no disclosure or suggestion of inactivating  $\beta$ -glucanase in a treated cereal.

Further, neither Kong nor Lindahl et al. contain any motivation for their combination, and none has been pointed to by the Examiner. The Examiner asserts that the Lindahl et al. final product inherently will have all the claimed attributes "because the process is the same." The Examiner's statement is ambiguous and the conclusion is unsupported. The process of Lindahl et al. differs substantially from that of the present invention. For example, the process disclosed by Lindahl et al. requires that there be no proteinase activity. Kong, on the other hand, requires proteinase, as does the present invention as recited in amended claim 1. Thus, the proposed combination fails for lack of motivation. The Examiner's unsupported conclusion of inherency is insufficient to establish a *prima facie* obviousness rejection.

The Examiner declares, in paragraph 14 of the Office action, that Applicants' statements relating generally to the nutritional benefits of SDF would have made it obvious to produce a wort rich in  $\beta$ -glucan, and thereby produce a healthy beverage. Applicants respectfully disagree, and submit that the Examiner is asserting an impermissible "obvious to try" standard which does not provide the motivation to modify Lindahl et al. as would be required for a proper combination with Kong.

The present invention is recited in amended claim 22 is a process for the production of a cereal wort or beer having a high content of soluble  $\beta$ -glucan of more than 0.2 wt % from a cereal or mixture of cereals. The process includes inactivating  $\beta$ -glucanase in the cereal or mixture of cereals to produce treated cereal, and utilizing enzymes during the process having  $\beta$ -glucanase activity sufficient only to eliminate from the treated cereal or mixture of cereals not more than 50% of soluble  $\beta$ -glucan which is contained before the process is effected in the cereal or mixture of cereals.

In contrast to the present invention as recited in amended claim 22, the Report does not teach a step of inactivating  $\beta$ -glucanase to obtain a treated cereal. Thus, the Report does not anticipate the present invention as recited in amended claim 22.

Further, Applicants respectfully disagree with the Examiner's claim of anticipation whereby it is "assumed that because the worts of the Report in light of Scott have glucan amounts as claimed that they therefore inherently teach a process whereby 'not more than 50% of soluble  $\beta$ -glucan is eliminated.'" The Examiner appears improperly to have distilled the invention down to a "gist" and has not regarded claim 22 as a whole.

Further, the Examiner asserts that a product which appears similar to the product of the invention is anticipatory of claim 22, which is a process claim (not a product-by-process claim.) Claim 22 recites a method of "inactivating  $\beta$ -glucanase" to obtain a treated cereal, and "utilizing enzymes during the process having  $\beta$ -glucanase activity sufficient only to eliminate from the treated cereal or mixture of cereals not more than 50% of soluble  $\beta$ -glucan which is contained before the process is effected in the cereal or mixture of cereals." Neither the Report nor Scott disclose or suggest a process step of inactivating  $\beta$ -glucanase. Moreover, Scott concludes that there is no apparent relationship between glucanase content of malts and the viscosity of the wort or the degree of  $\beta$ -glucan breakdown. Thus, Scott is not properly combinable with the Report, and appears to teach directly away from the present invention.

In asserting a prior art product against the process of the present invention, the Examiner concludes, without support, that because the compositions appear to have similarities, they must have been produced by the same process. The Examiner respectfully is requested to provide an explanation and rationale as to why the prior art product anticipates process claim 22.

With respect to the rejection under 35 U.S.C. § 103 of claims 1-9, 11-14, and 21-25, as noted above the Report does not teach or suggest a step of inactivating  $\beta$ -glucanase. Scott does not cure the deficiencies of the report. As noted above, Scott is silent as to a  $\beta$ -glucanase inactivation step. Further, Scott concludes that there is no apparent relationship between glucanase content of malts and the viscosity of the wort or the degree of  $\beta$ -glucan breakdown. Moreover, Scott discloses that  $\beta$ -glucan breakdown exceeds 20%, whereas claim 1 recites that  $\beta$ -glucan does not decrease more than 20% .

Thus, the Report and Scott, taken alone or in combination, do not anticipate or render obvious the present invention as recited in amended claim 1.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

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Respectfully submitted,

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**Version With Markings to Show Changes Made**

1. (Amended) A process for the production of a cereal wort or beer having a high content of soluble  $\beta$ -glucan of more than 0.2 wt % from a cereal or mixture of cereals in which [the] a  $\beta$ -glucanase activity of any ingredient employed in the process will not decrease soluble  $\beta$ -glucan by more than 20 wt% compared to the yield from the corresponding source of non-germinated cereal or mixture of cereals, the process comprising the steps of:

~~inactivating  $\beta$ -glucanase in~~ [treating] at least one cereal [by heating to reduce  $\beta$ -glucanase activity in the] ~~to produce a~~ treated cereal;

forming an aqueous cereal slurry containing from 10% to 30% by weight of the treated cereal, the cereal being wet or dry milled; and

mashing the slurry at a temperature above 50°C in the presence of at least one starch degrading enzyme and at least one protein degrading enzyme.

6. (Amended) The process of claim 1, wherein the step of ~~inactivating~~ [treating the at least one cereal] comprises heat treating the cereal sufficiently to lack  $\beta$ -glucanase activity.

22. (Amended) A process for the production of a cereal wort or beer having a high content of soluble  $\beta$ -glucan of more than 0.2 wt % from a cereal or mixture of cereals, the process comprising the steps of:

~~inactivating  $\beta$ -glucanase in~~ [treating] the cereal or mixture of cereals [by heating] to ~~produce~~ [reduce  $\beta$ -glucanase activity in the] treated cereal;

utilizing enzymes during the process having  $\beta$ -glucanase activity sufficient only to eliminate from the treated cereal or mixture of cereals not more than 50% of soluble  $\beta$ -glucan which is contained before the process is effected in the cereal or mixture of cereals.